Inverse Functions
Section 2.7

Learning Objectives:

1. Verify inverse functions.
2. Find the inverse of a function.
3. Use the horizontal line test to determine if a function has an inverse function.
4. Use the graph of a one-to-one function to graph its inverse function.
5. Find the inverse of a function and graph both functions on the same axes.

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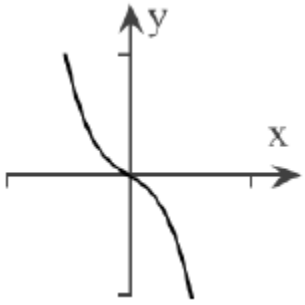
1. The function $f(x) = 4x + 2$ is one to one. Find an equation for $f^{-1}(x)$, the inverse function.

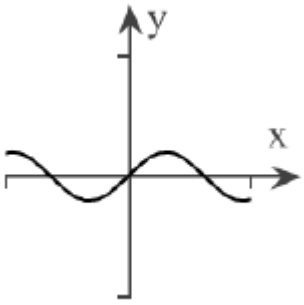
2. The function $f(x) = x^3 - 3$ is one to one. Find an equation for $f^{-1}(x)$, the inverse function.

3. The function $f(x) = \frac{1}{x} + 3$ is one to one. Find an equation for $f^{-1}(x)$, the inverse function.

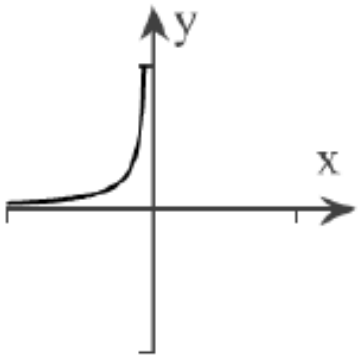
4. Does the graph represent a function that has an inverse?



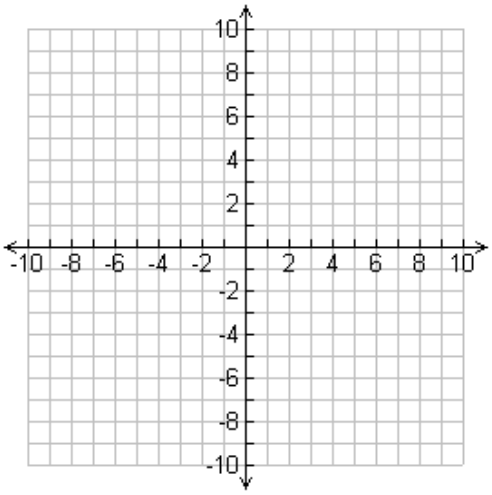
5. Does the graph represent a function that has an inverse?



6. Does the graph represent a function that has an inverse?



7. For the function $f(x) = 3x - 4$ determine whether f(x) is one to one. If so, find the formula for the inverse, give the domain and range for f^{-1}, and then graph both functions on the same axes.
   a. Is f(x) a one to one function?
      _____
   b. The inverse functions is
      $f^{-1}(x) =$ _____
   c. Domain: _____
   d. Range:_____
   e. Graph f and f^{-1} below:



Answer Key:

1.		$\frac{x-2}{4}$
2.		$\sqrt[3]{x+3}$
3.		$\frac{1}{x-3}$
4.		Yes
5.		No
6.		Yes
7.	a.	Yes
	b.	$\frac{x+4}{3}$
	c.	$(-\infty, \infty)$
	d.	$(-\infty, \infty)$
	e.